

Department of Physics & Astronomy

Dr. Emile A. Schweikert

Department of Chemistry
Texas A&M University

Friday, February 8, 2012

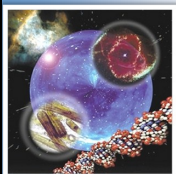
Time: 3:00 p.m. - 4:00 p.m.

UC 2.02.02

New Generation Surface Characterization

In contrast to microscopy which can visualize nanometer scale structures and objects, molecular characterization of complex surfaces is virtually impossible below micrometer dimensions. The primary reason is the minute amount of sample available for analysis. Innovative advances are required to detect and localize molecules at the nanoscale. Our approach is based on a novel mode of secondary ion mass spectrometry, SIMS. Surface bombardment is with nanoprojectiles, NPs, typically. The impact of such a projectile at high velocity (tens of km/s) causes emission of multiple secondary ions, Sis . Thus it is feasible to run the SIMS experiment as a sequence of individual projectile impacts. The ionized ejecta are mass analyzed and recorded separately from each impact. Concurrently with negative Sis multiple electrons are ejected. The latter can be recorded with an electron emission microscope for determining the coordinates of SI emission from individual impacts.

The talk will address the rationale for NP-SIMS, describe the original instrumentation and methodology and present examples of applications including the characterization of nano-objects, co-localization of molecules and prospects for further development.



Department Contact Information

Dr. Marcelo Marucho • 210.458.7862 • Marcelo.Marucho@utsa.edu

Nakia Scott • 210.458.5698 • Nakia.Scott@utsa.edu

<http://physics.utsa.edu/>